

Connecting the *Brown* and the *Green*:

USAID's Role Promoting Cleaner Production in Latin America and the Caribbean

OAS Meeting

**Washington, D.C.
June 2002**

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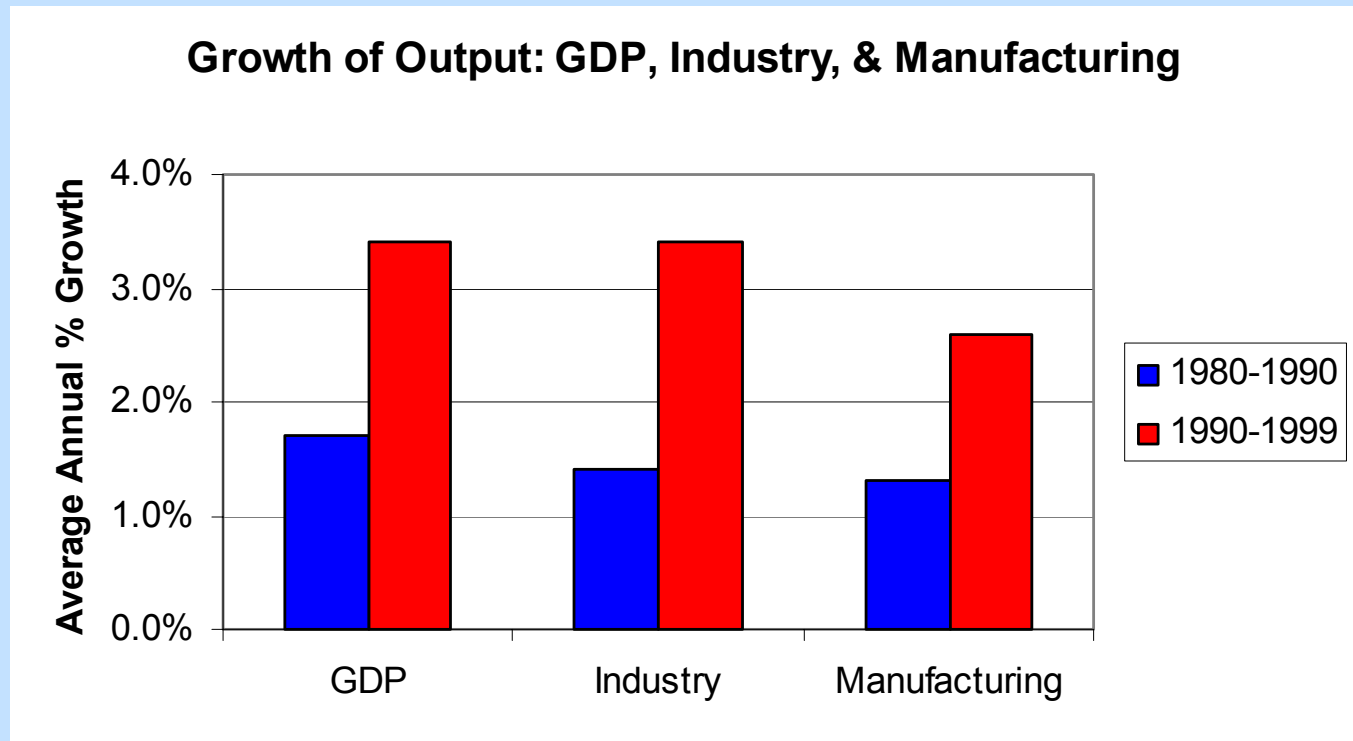
LAC Regional Strategic Objective



- Environmental Performance of Targeted LAC Businesses and Communities Improved through the Promotion of Replicable Market-Based Models

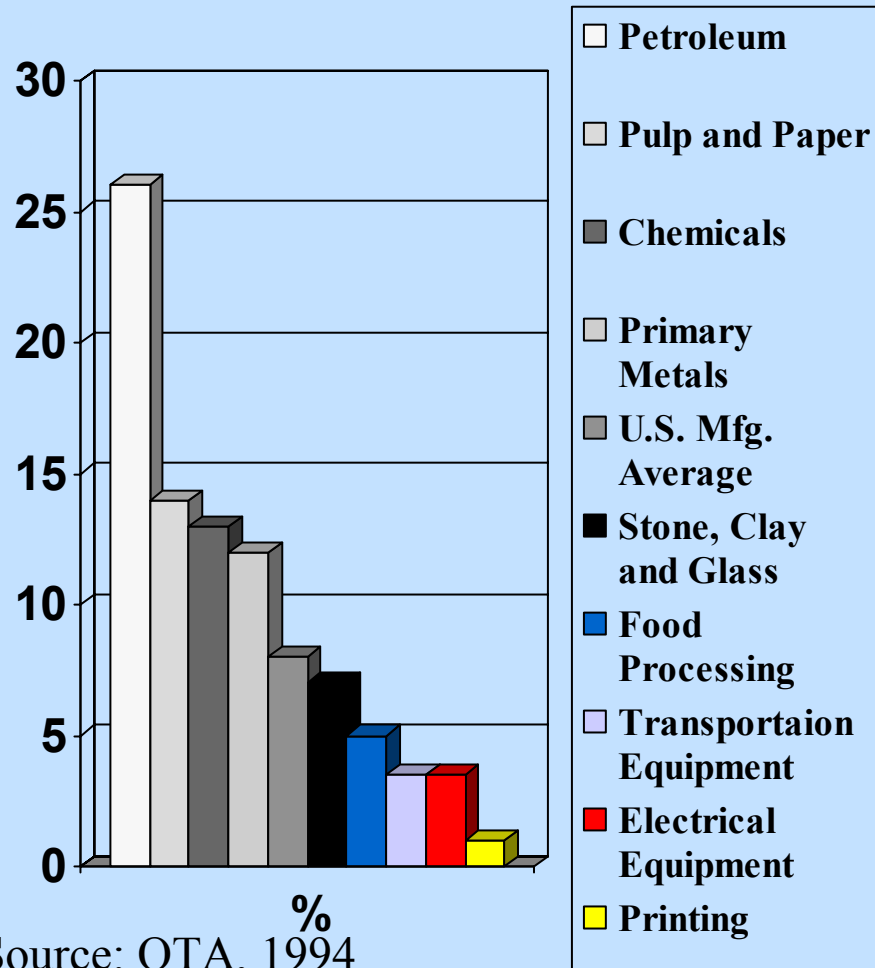
LAC Industrial and Manufacturing Output Are Increasing

The average annual percentage growth of manufacturing and industry have increased markedly between 1990-1999 as compared with the earlier decade.

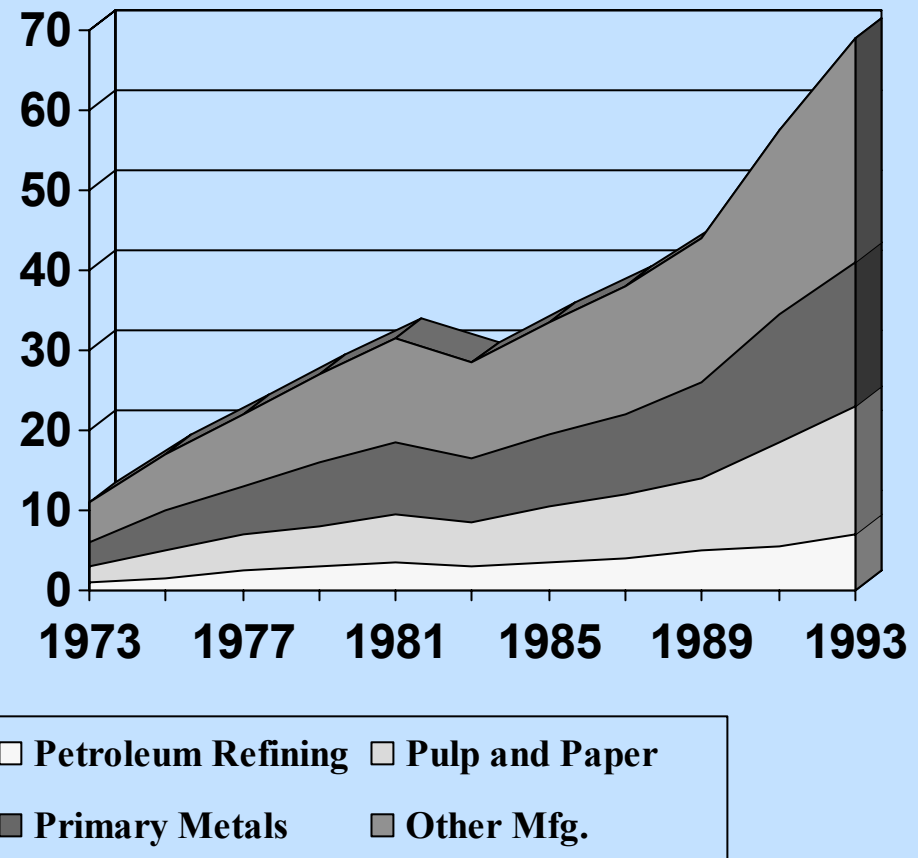


U.S. Industrial Experience: Cost of End-of-Pipe Control Technology

Percent of Capital Expenditures (1993)



Treatment Costs and Expenditures (1973 - 1992) in US\$ billion



Pollution Responses



OPTIONS	RESULT
<ul style="list-style-type: none">• Do nothing or discharge to environment	<ul style="list-style-type: none">• Severe threat to biodiversity and public health
<ul style="list-style-type: none">• Treat at end-of-pipe	<ul style="list-style-type: none">• High economic cost
<ul style="list-style-type: none">• Prevention	<ul style="list-style-type: none">• Sustainable Development

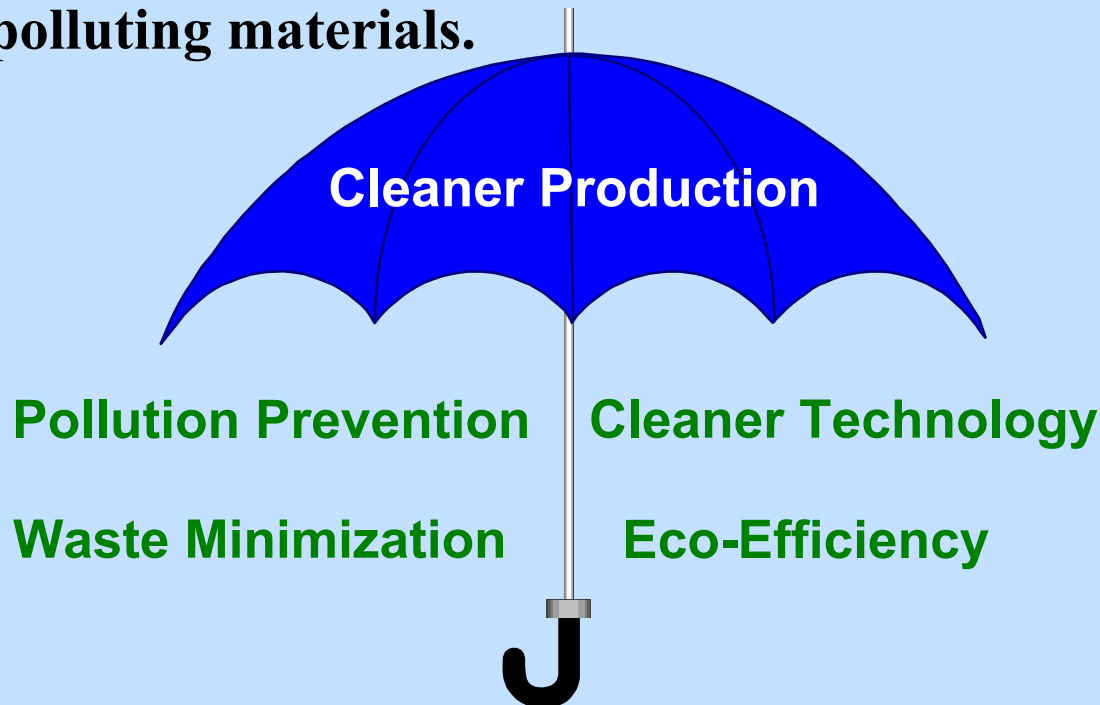
The Impact of Pollution in Latin America and the Caribbean is Large

- ◆ **Pollution in Latin America and the Caribbean has a serious effect on the health and well-being of the population and the natural environment.**
- ◆ **Air Pollution in LAC Contributes to:**
 - **Substantial health problems**
 - ☞ **Millions of cases of chronic respiratory illness among children**
 - ☞ **Hundreds of thousands of bronchitis cases among the elderly**
 - **Decreased productivity and lost workdays (estimated at nearly 65 million annually)**
- ◆ **Ecosystem damage includes:**
 - **The threat to more than 1/3 of all coral reefs in the Caribbean (which constitute 12% of the world total). These are considered at high risk due to increased runoff and sedimentation**

What is Cleaner Production?

Cleaner production (CP) addresses pollution before the waste is generated, thereby safeguarding the environment and public health

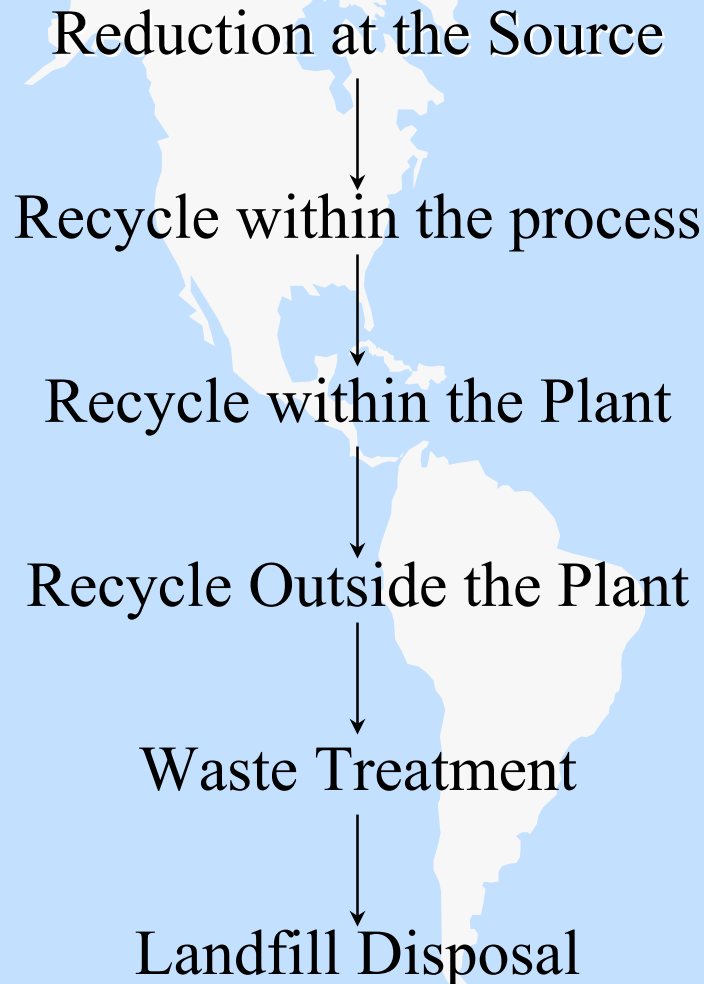
- CP techniques can include: good housekeeping, better management, improved processes and controls, new and more efficient technologies, recycle/recovery, raw material substitution to less polluting materials.



Why Pollution Prevention is More Viable than End-Of-Pipe Systems

Traditional “End-of-Pipe”	Paradigm Shift	Appropriate Pollution Prevention (PP)
Cost effective control of waste after generation.	Goal	Cost effective reduction of waste before generation.
Address pollution after the fact. Manage to reduce impacts on the environment after generation.	Focus	Prevent the release of waste to the environment before the waste is ever produced or generated.
Arbitrary delineation of hazardous and non-hazardous waste. Management methods vary by type of waste (e.g., hazardous vs. Non-hazardous)	Wastes of Concern	All releases to the environment are treated equally.
Approaches are defined separately for each environmental medium.	Media	Multimedia - Approach is integrated and addresses all releases to all media.
Increases operating costs. (True for over 25 years in U.S.)	Costs	No automatic increase in operating costs, and most costs can be recovered within a few years.

The Waste Management Hierarchy



Waste Management through Cleaner Production

Reduction at the Source

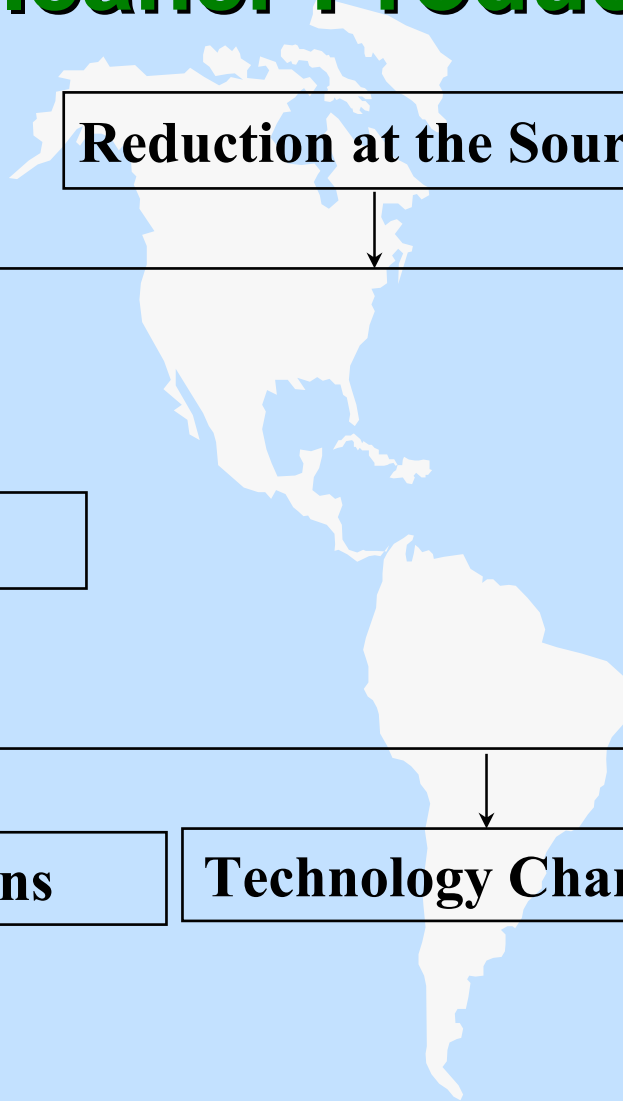
Change Process

Change Product

Improve Operations

Technology Changes

**Raw Material
Changes**



Waste Minimization Returns

STEP 1: GOOD HOUSEKEEPING

Most cost efficient, easiest, and most effective method of achieving waste minimization

STEP 2: RECYCLING & REUSE

Cost efficient, easy, and effective method of achieving waste minimization

STEP 3: MATERIALS SUBSTITUTION

Practices are costly, but effective in achieving waste minimization

STEP 4: PROCESS MODIFICATION

Practices are the most expensive, but also the most efficient and most effective waste minimization

INVESTMENT

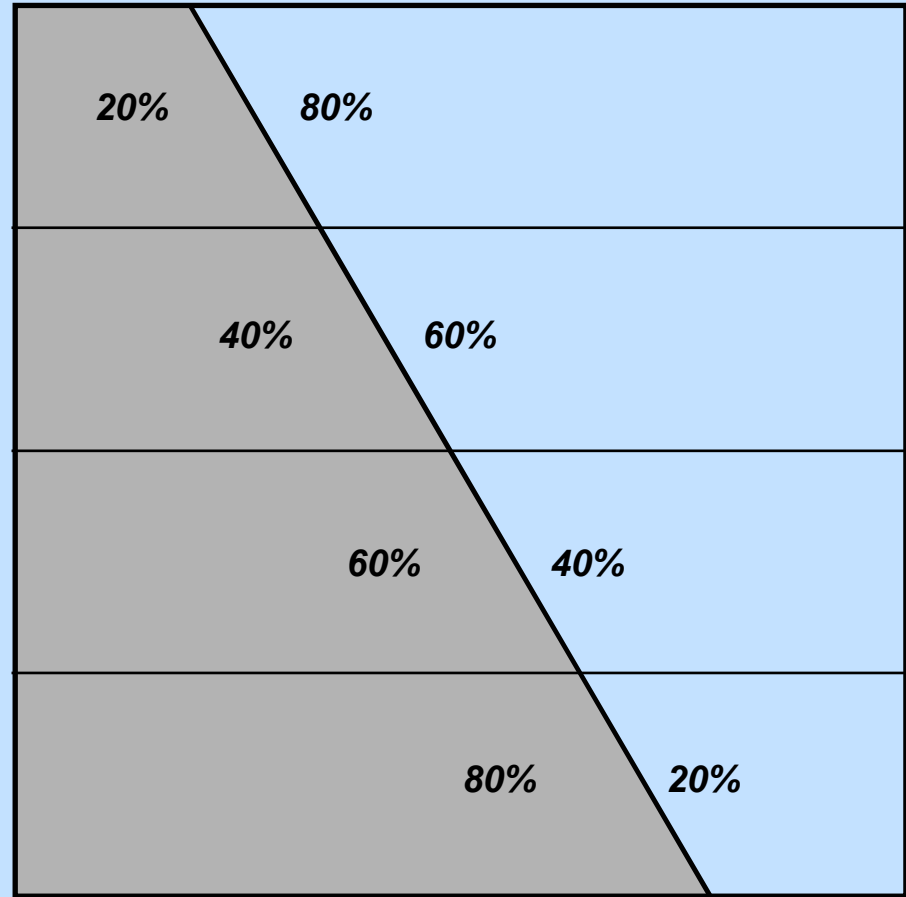
Small

Large

BENEFITS

Large

Small



The Benefits of Being Green

Economic Benefits

- Low implementation costs
- Rapid return on investment
- Improved manufacturing efficiency and competitiveness
- Reduced operating costs
- Quality improves with efficiency



The Benefits of Being Green

Social and Environmental Benefits

- Reduced environmental impacts on rivers, land, air, and biodiversity
- Improved morale, health, and security of employees
- Improved public health
- Strengthened public image of company
- Competitive companies = jobs = economic growth and reduced social pressures



RESULTS (1993-2002)

Policy Support:

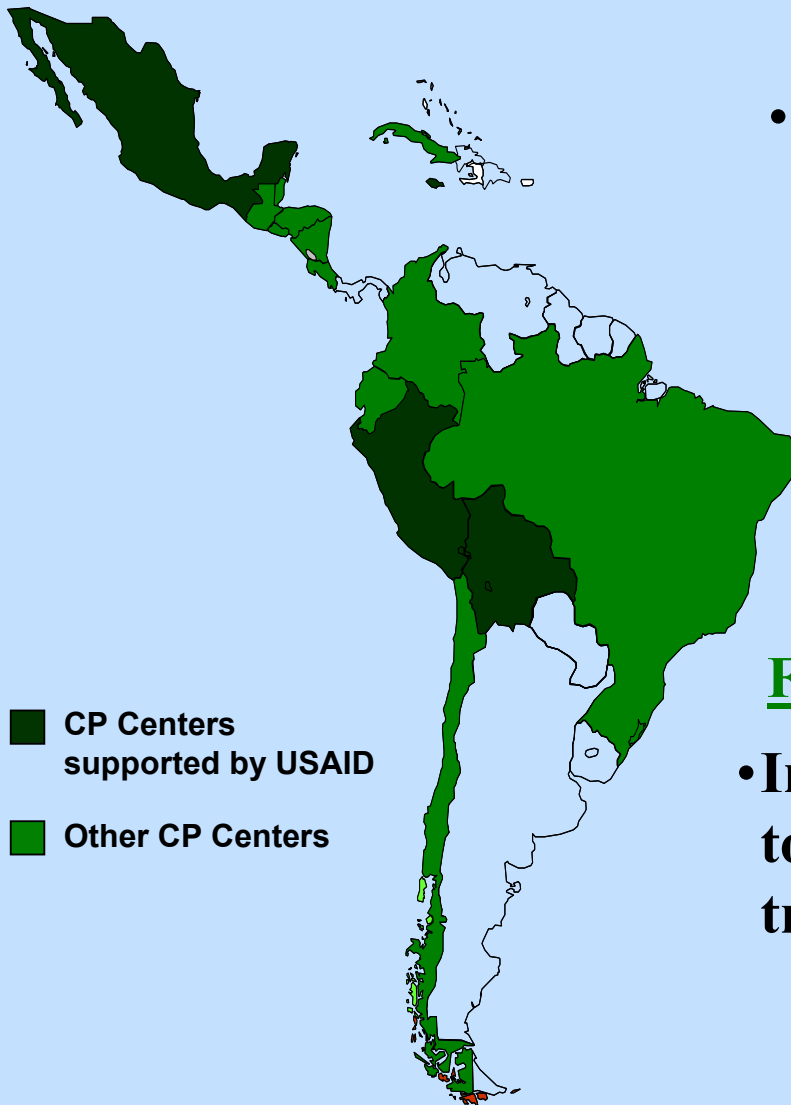
- Enhanced regulatory and institutional capacity of relevant government agencies

Technical Support:

- Cement
- Chemicals
- Electroplating
- Fish meal
- Food & beverage
- Hospitals
- Leather tanning
- Metal finishing
- Mining
- Paper and wood
- Textiles
- Tourism

Financing Support:

- Innovative solutions to enable technology transfer



“Best Management Practices in Nonferrous Mining and Processing” -- A Practical Manual



- ◆ Prepared by the Environmental Pollution Prevention Project (EP3)
- ◆ Objective of the manual – to describe the technologies and environmental management practices that offer:
 - **greatest opportunity for environmental protection, and**
 - **cost savings through pollution prevention and control**
- ◆ The manual discusses typical wastes and clean mitigation measures in:
 - **Mining and Extraction**
 - **Ore Processing**
 - **Metals Processing and Refining**
- ◆ The manual includes guidance in establishing an Environmental Management System at the company level.

RESULTS: Case Studies

Carbonated Beverage Plant in Mexico



	Unit	Consumption	Costs (\$)	Economic Benefit	Annual Cost
Potable Water	M ³	711,006	30.48 network 29.99 well	2,921,739	16,561,962
Concentrate	Units	47.16		789,380	162,348,742
Sugar	Kg	27,358,599	5.18 / kg	649,903	141,717,543
CO ₂	Kg	2,050,150	2.23 / kg	25,782	4,571,835

RESULTS: Case Studies (2)

Implementation Results for Recommended Pollution Prevention Measures in Bolivia (EP3)

Average payback = 6 months

Sector	# of plants	Implemented Recommendations	Investment Size (US\$)	Annual Savings (US\$)
Tanneries	2	55%	1,290	6,890
Textiles	1	60%	23,700	80,300
Chicken slaughterhouse	1	80%	12,140	17,540
Cattle slaughterhouse	1	63%	300	3,800
Meat packing	1	47%	38,200	18,500
Breweries	1	71%	55,000	100,000
<i>Total</i>	<i>7</i>		<i>130,630</i>	<i>227,030</i>

RESULTS: Case Studies (3)

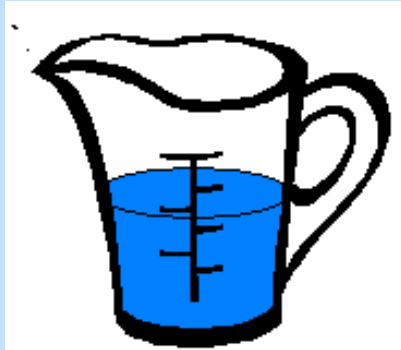
Implementation Results for
Recommended Pollution Prevention Measures in Bolivia (2000)

Sector	Investment Size (US\$)	Annual Savings (US\$)	ROI (%)
Dairy	163,000	34,100	21
Sugar	1,718,000	527,000	31
Meat Processor	221,000	292,000	132
Sugar	11,300	17,000	150
Beverage	9,000	16,200	180
Tannery	490	14,700	3000
Dairy	221,000	292,000	132

RESULTS: Case Studies (4)

CP Successes in Bolivia

Implementation of CP practices at eight facilities in Bolivia has achieved substantial environmental and economic results



◆ Environmental Results

- **Reduced Organic Discharge**
 - ☞ **Decrease of 3.7 million kg BOD/year**
- **Water Savings**
 - ☞ **3.8 million m³/year = 2 mo. of water for La Paz**



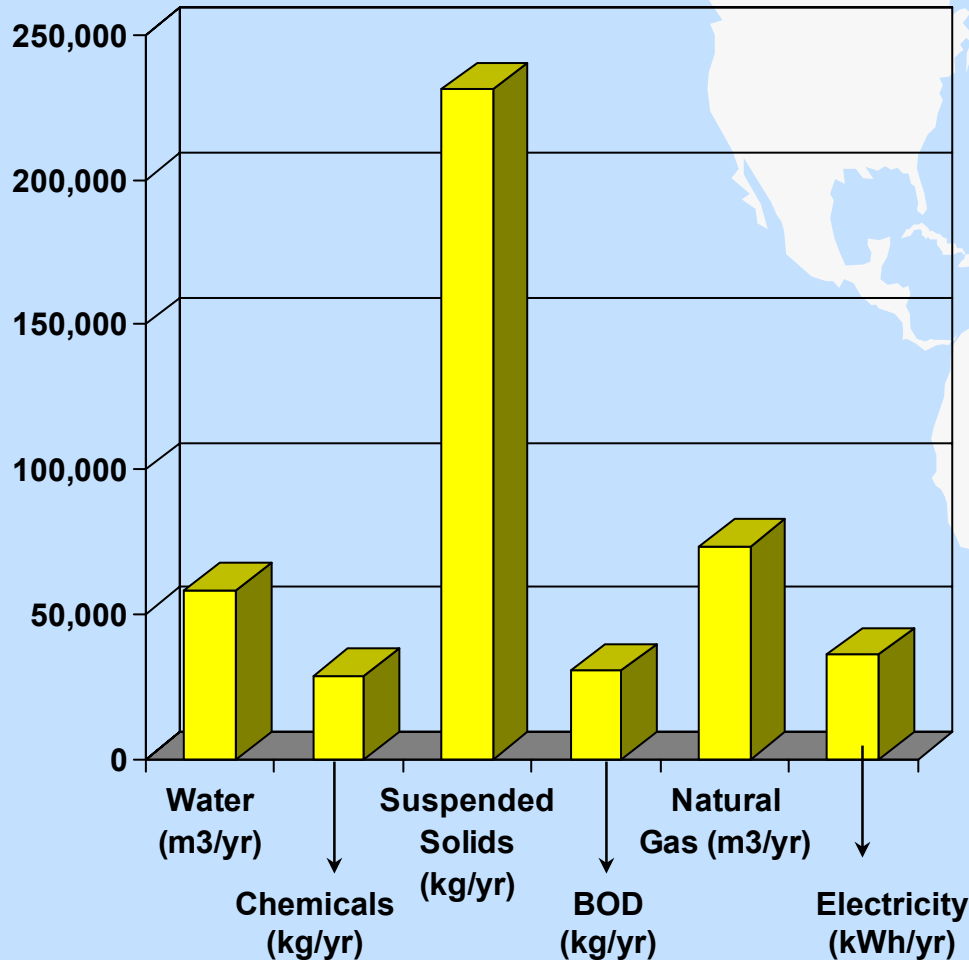
◆ Economic Results

- **Financial Savings**
 - ☞ **US \$1 million/year**

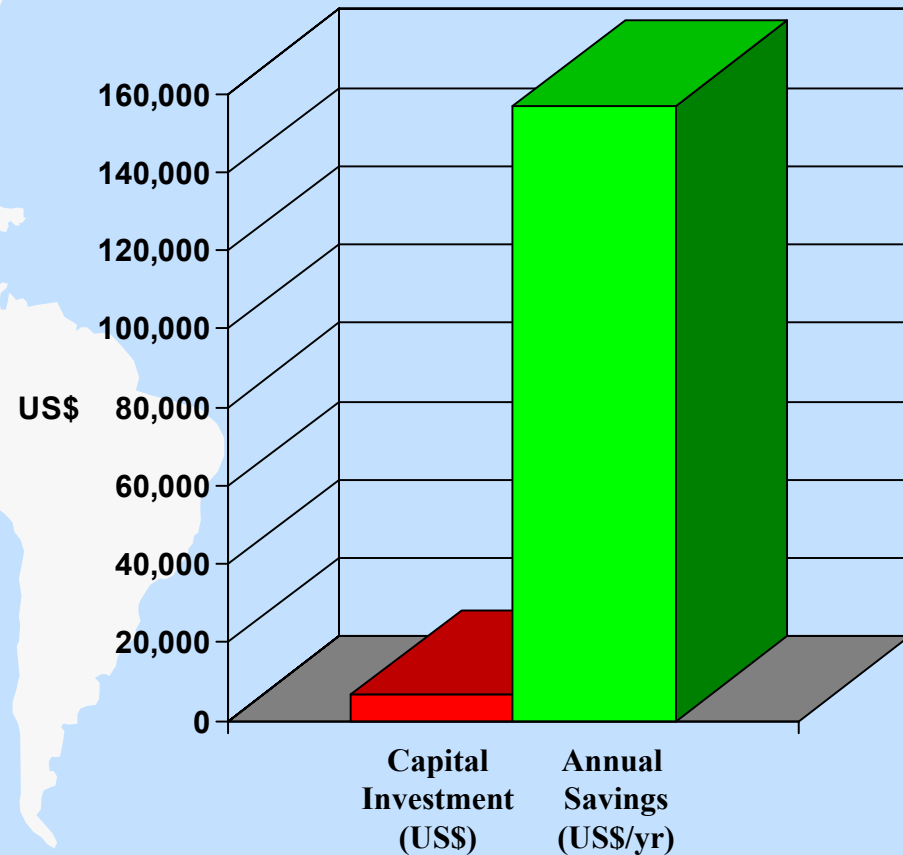
RESULTS: Case Studies (5)

Brewery in Bolivia (EP3)

Environmental Benefits



Economic Benefits



Return on investment = ~ 0.5 months

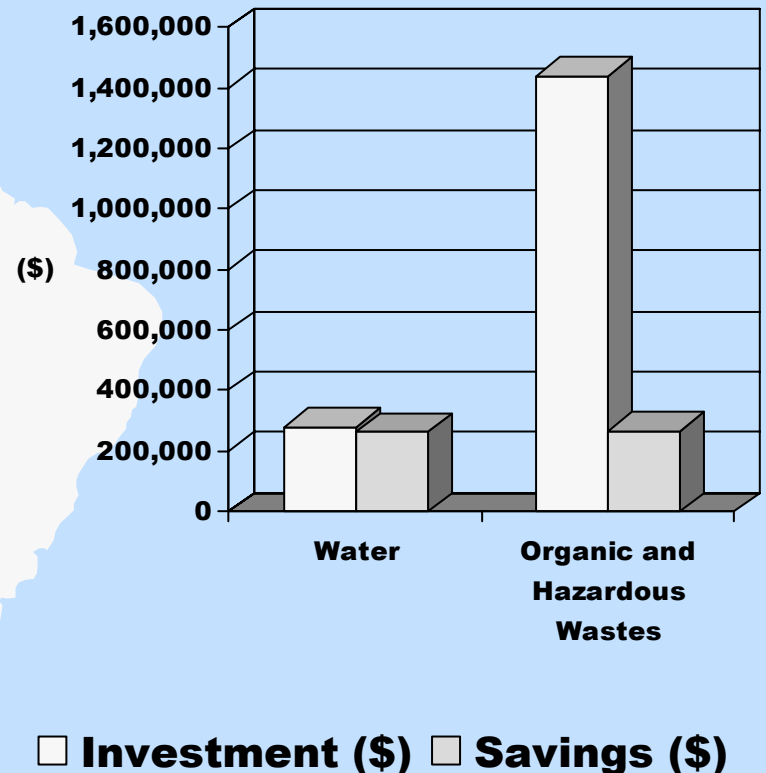
RESULTS: Case Studies (6)

Sugar Processing Plant

Return on Investment = 31%

Environmental Benefits

- Reduced water consumption by 1,740,000 m³/zafra (59% of total)
- Reduced COD generation by 3,600 ton/zafra (34% of total)
- Reduced metal wastes by 126 kg/zafra (100% of total)



RESULTS: Case Studies (7)

Implementation Results for the Recommended Pollution Prevention Measures in Ecuador (EP3)

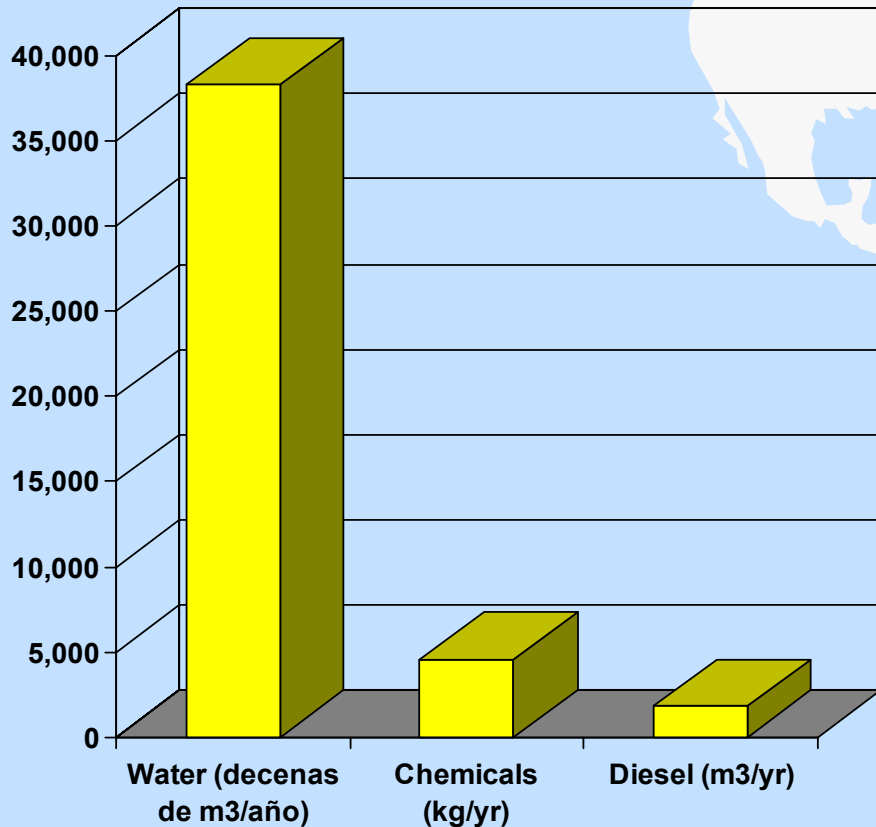
Sector	# of Plants	No. of P2 Options Identified	Investment Size (\$)	Annual Savings (\$)
Tanning	5	42	297,000	294,070
Textiles	2	33	64,500	195,800
Paper	2	18	1,063,200	1,719,800
Ceramics	2	17	1,199,140	1,038,690
Car Assembly	2	12	374,000	409,450
Edible Oil	1	7	281,000	283,000
Palm Oil Extraction	1	7	460,000	943,770
Aluminum Anodizing	1	7	361,000	277,000
<i>Total</i>	<i>16</i>	<i>143</i>	<i>4,099,840</i>	<i>5,161,580</i>

Average payback = 10 months

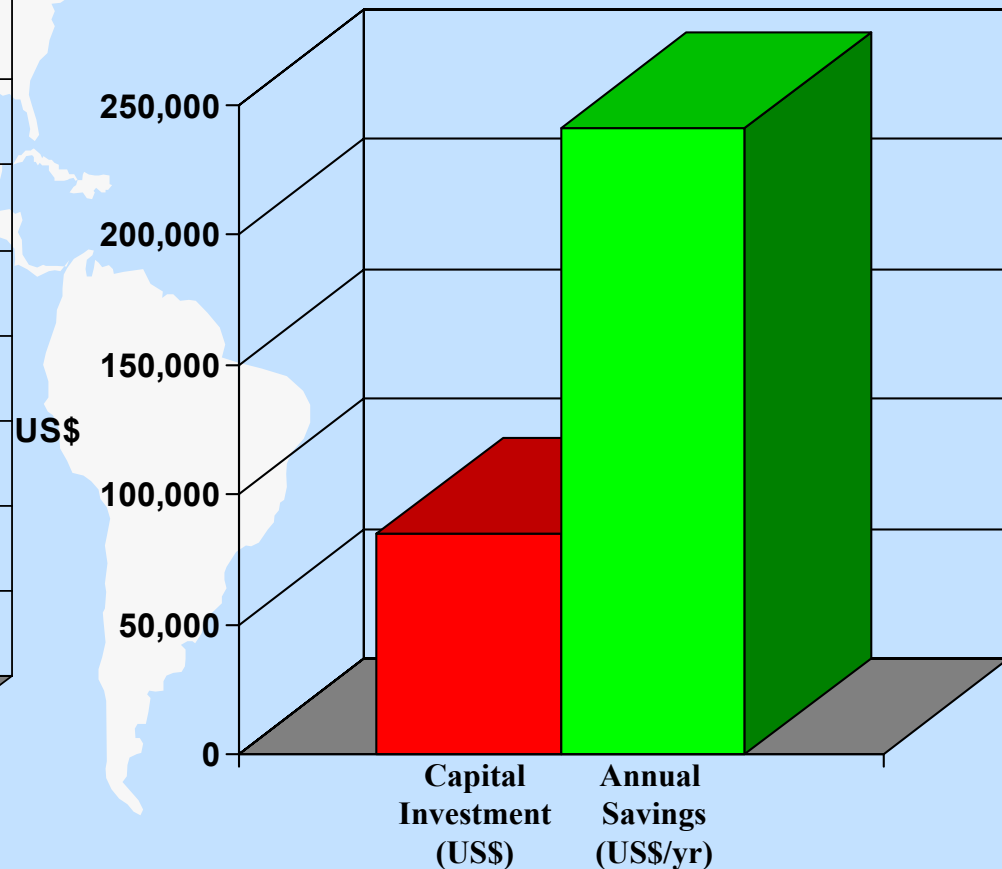
RESULTS: Case Studies (8)

Four Textile Plants in Ecuador

Environmental Benefits



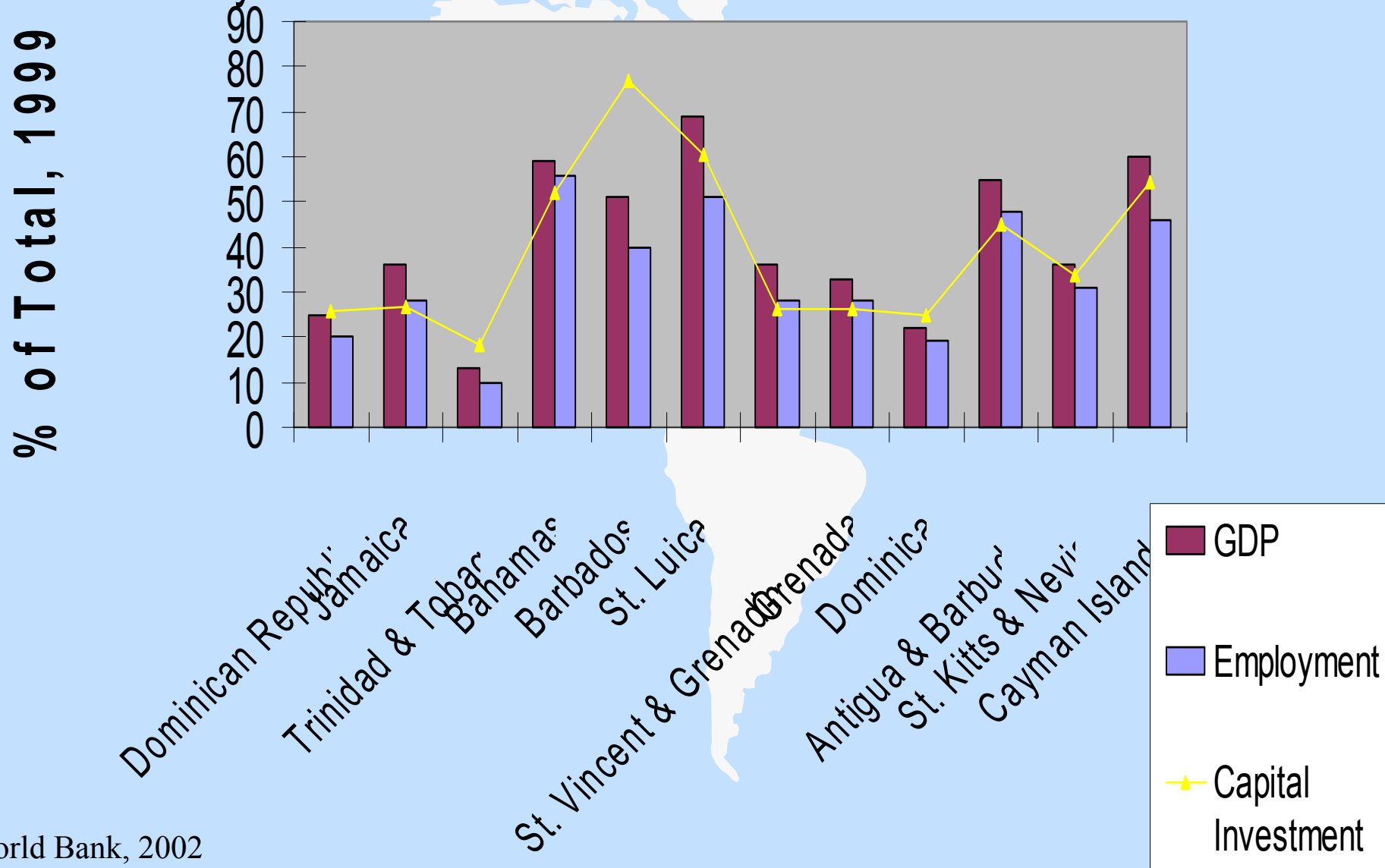
Economic Benefits



Return on investment \approx 4 months

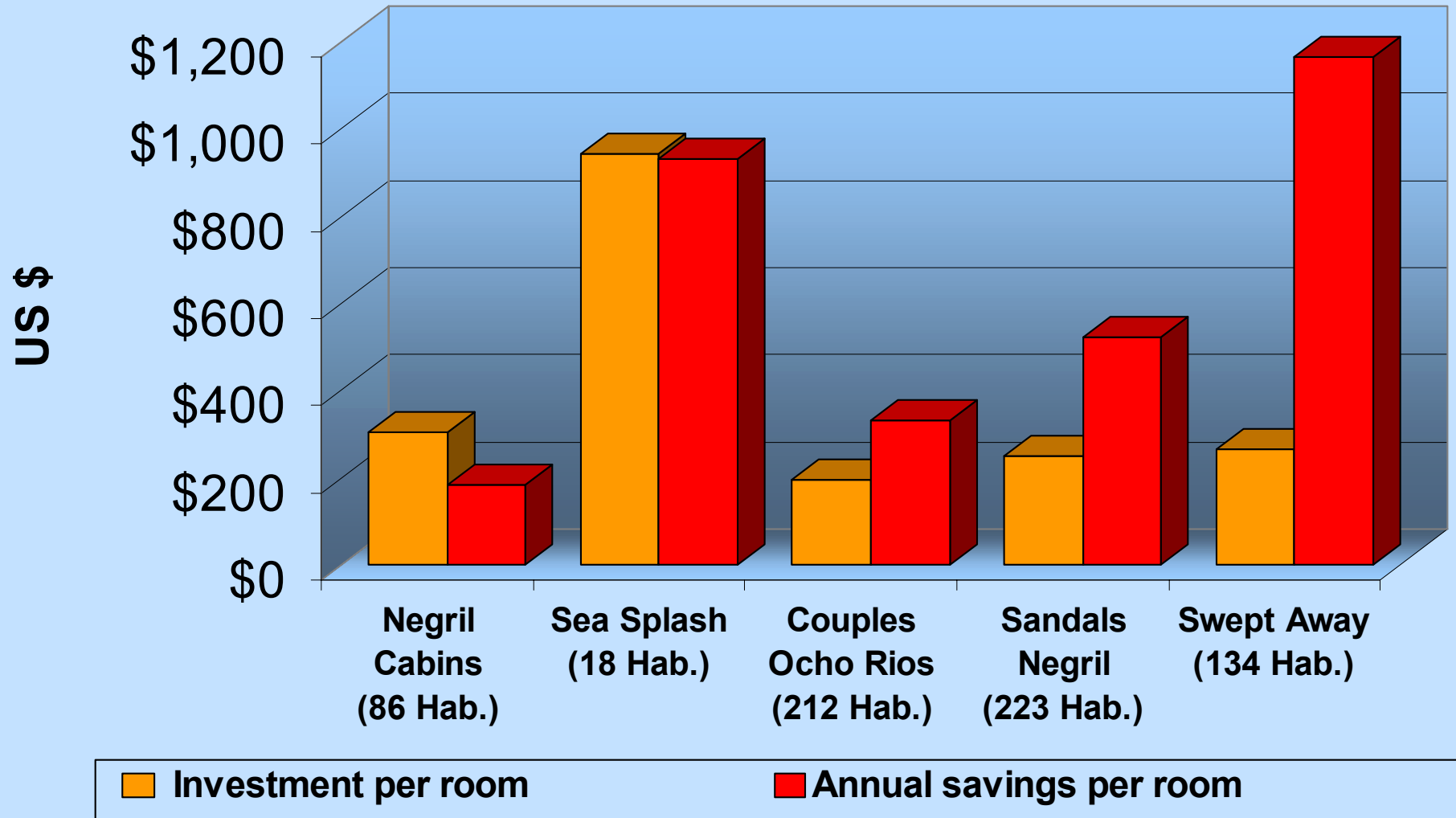
Tourism and Travel: Caribbean

Key economic sector based on environmental conservation



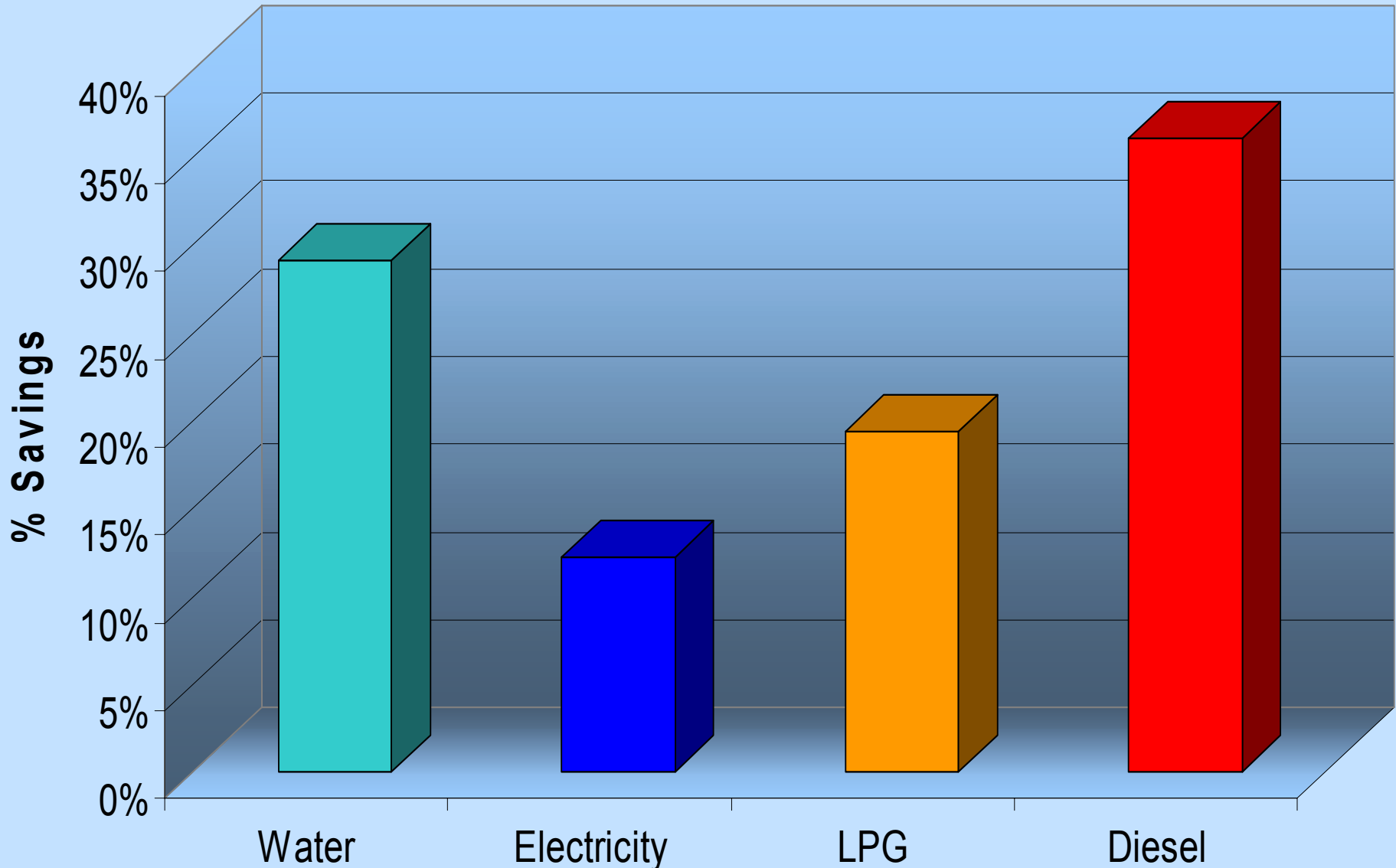
RESULTS: Case Studies (9)

Hotels in Jamaica: Environmental Management



RESULTS: Case Studies (9 Cont.)

Hotels in Jamaica: Average Efficiency Gains



RESULTS: Financing

DCA Loan Guarantee Fund for Industrial Competitiveness in Peru

Aspects of the Credit Line:

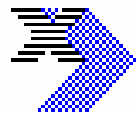
- **US\$2 Million**
- **Full faith and credit of the U.S. Government for 50% of borrowed principal**
- **Loans through a local national bank**
- **Loans in US\$ and Peruvian Soles**
- **Loan amounts up to \$400K**
- **Favorable terms through the reduced level of risk to the bank**

RESULTS: Financing

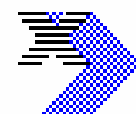
DCA Loan Guarantee Fund for Industrial Competitiveness in Peru



50% Guarantee



**BANCO DE CREDITO
DEL PERU**



*

Certification



Loan

Private Firm



Peru

*Contract in
Process

RESULTS:

Leveraging International Donor Resources



- **PERU:**

- **Collaboration between USAID/Peru and Swiss government (SECO) to support CP**
- **IDB/MIF support for CET expected in 2002**

- **Bolivia:**

- **World Bank support for CP fund**
- **DANIDA support for waste exchange**
- **IDB/MIF support for CPTS expected in 2002**

What Do We Hope to Achieve? (1)

USAID will continue to play a catalyzing role in fostering cleaner production in Latin America

– Institutional Reform

- ➡ Innovative legal and regulatory changes including CP incentives

What Do We Hope to Achieve? (2)

USAID will continue to play a catalyzing role in fostering cleaner production in Latin America

- **Financing:** the key to more significant Investments and technology transfer
 - ☞ Partnerships with banks, donors, and intermediaries

What Do We Hope to Achieve? (3)

USAID will continue to play a catalyzing role in fostering cleaner production in Latin America

– Developing Local Capacity

- ☞ **Develop local consultants trained to incorporate cleaner technology and offer CP services**
- ☞ **Provide access to technical assistance and information for up-to-date “know-how”**
- ☞ **Fiscal incentives to favor CP solutions**

What Do We Hope to Achieve? (4)

USAID will continue to play a catalyzing role in fostering cleaner production in Latin America

– Taking the Larger View

- ☞ Connecting “**Brown**” and “**Green**” Environmental Issues: recognizing upstream impacts on sensitive ecological zones (e.g. PROARCA II)
- ☞ Making the Connection between the Urban and Industrial
- ☞ Fostering Regional Cooperation and Capacity Building



“The difficulty lies, not in the new ideas, but in escaping the old ones”

- John Maynard Keynes